

REMARKS

Reconsideration and allowance are respectfully requested. The applicants thank the examiner for the examination to date, including the personal interview held November 13, 2007. At the interview, the applicants primarily reviewed the obviousness issue including the cited references and the motivation to combine references. The present Amendment is believed to be in compliance with the rule and spirit of Rule 133, including corresponding discussion in the MPEP, but the Examiner is welcome to contact the undersigned if additional documentation about the interview is called for.

At the interview, the Examiner preliminarily indicated again that claim 7 would be allowable but that broader claims also may be possible because the secondary reference, US Patent No. 6,685,810 (Noca), does not adequately describe the cover as presently claimed. The applicants address this in more detail below.

Claims 1, 3-15, 17-19, and 45-46 are pending and stand rejected. Claims 20-44 stand withdrawn.

The independent claims are claims 1 and 45.

The present amendments are believed to be within the scope of Rule 116 and place the claims in better form for appeal. In particular, claim 7 was amended to reflect the language the Examiner has said would be allowable. Also, claims 1, 3-15, and 17-46 were rejected as allegedly failing to comply with the written description requirement set forth in 35 U.S.C §112

paragraph 1. While the applicants respectfully traverse, the applicants presently remove the term “elastically” from independent claims 1 and 45 which should render this rejection moot. The Examiner during the personal interview preliminarily indicated that this would be acceptable. No new matter is added. Withdrawal of the rejection is respectfully requested.

Response to Rejection under 35 U.S.C. § 103(a)

Claims 1, 3-15, and 17-46 were rejected under 35 U.S.C. § 103(a) as unpatentable over Dai *et al.* (2004/0149209) in view of Noca *et al.* (US 6,685,810). The applicants respectfully traverse. There is no motivation to combine the references, and every element of the present invention as claimed is not present even if the references are combined for sake of argument.

The applicants initially focus on independent claim 1. Dai *et al.* (“Dai”) fails to describe various features of the presently claimed inventions including, for example:

- (a) a substrate having a microfluidic channel;
- (b) a compressed carbon nanotube (CNT) mesh fixedly attached within the microfluidic channel; and
- (c) a cover layer sealably capping the channel to compress the carbon nanotube mesh.

These elements are important because, for example, they provide for pressure driven flow through the microfluidic channel. See, for example, the specification at page 12 describing “pressure driven flow” applications and claim 46. Moreover, flow is not just through a mesh but

through a compressed mesh. This helps prevent “producing a gap between the mesh and the cover” as described in the specification at page 10, [0031]. The references cited by the Examiner do not individually or in combination provide for pressure driven flow, and they also do not provide a compressed mesh.

The Examiner cited Noca to compensate for the many Dai deficiencies. In particular, the Examiner cites to the cap layer in Noca as being the cover layer which compresses the carbon nanotubes (col. 10, line 47 – col. 11, line 2, element 66). However, the Noca capping layer is clearly not “a cover layer sealably capping the channel to compress the carbon nanotube mesh.” The Noca cap layer does not seal; the Noca cap layer does not compress nanotubes. The applicants could not find the claimed aspect in the teachings of Noca, and if the Examiner can find this, a telephone interview with the undersigned is respectfully requested. More particularly, Noca describes that the capping layer is formed in a vaguely described deposition or growth step which is not explained in any detail to provide sufficient enablement to reach the present claims. No figures are provided to clarify the vague description. One of ordinary skill would not take from this Noca teaching that the cap layer compresses the carbon nanotubes or forms a seal. This is not surprising as Noca does not describe or suggest pressurizing the flow channel and therefore does not teach or suggest a seal. The flow processes in Noca through the channel are not pressurized, and if the Examiner can show where the flow is pressurized, or where the cap layer provides a pressure seal, a telephone interview with the below is again respectfully requested. If the Examiner can conceptualize or draw how Noca describes a capping layer which seals and compresses, the undersigned requests dialog to advance prosecution. Hence, even if the

references are combined for sake of argument, the presently claimed inventions are not arrived at. Hence, no prima facie obviousness is present because a missing claim element is present in the record.

Moreover, no motivation is present to combine these references. Dai merely describes manufacturing generally disordered CNT mesh which runs directly against the Noca teaching for an ordered array of CNT pillars. Dai only vaguely and without detail describes use of materials for molecular filtration membranes, but Dai does not provide any specific teaching to use the materials in an ordered arrangement in a device as required by Noca. The Examiner needs to consider the total teachings of the references including motivation to NOT combine the references. In this record, the motivation to not combine references cuts against prima facie obviousness. The applicants incorporate by reference their prior remarks about the references not providing motivation to combine references.

The applicants respectfully suggest that their position for non-obviousness on independent claim 1 also applies to independent claim 45 and to all dependent claims.

In addition, the applicants respectfully request that the Examiner consider the merits of the dependent claims separately. In particular, for example, claim 46 recites “pressure driven flow” which is not taught or suggested by the cited references. Also, claim 13 provides a “channel etched as a groove” and claim 15 recites an “anodically bonded” cover layer. These claims are even further from the combined teachings of the cited references.

The allowability of claim 7 has previously been noted in the record and at the interview.

Applicant believes that the present application is now in condition for allowance.
Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application and prevent the need for an appeal or a continuation.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date

March 5, 2007

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